

NOTES ON RARE TEXAS AND OKLAHOMA PLANTS

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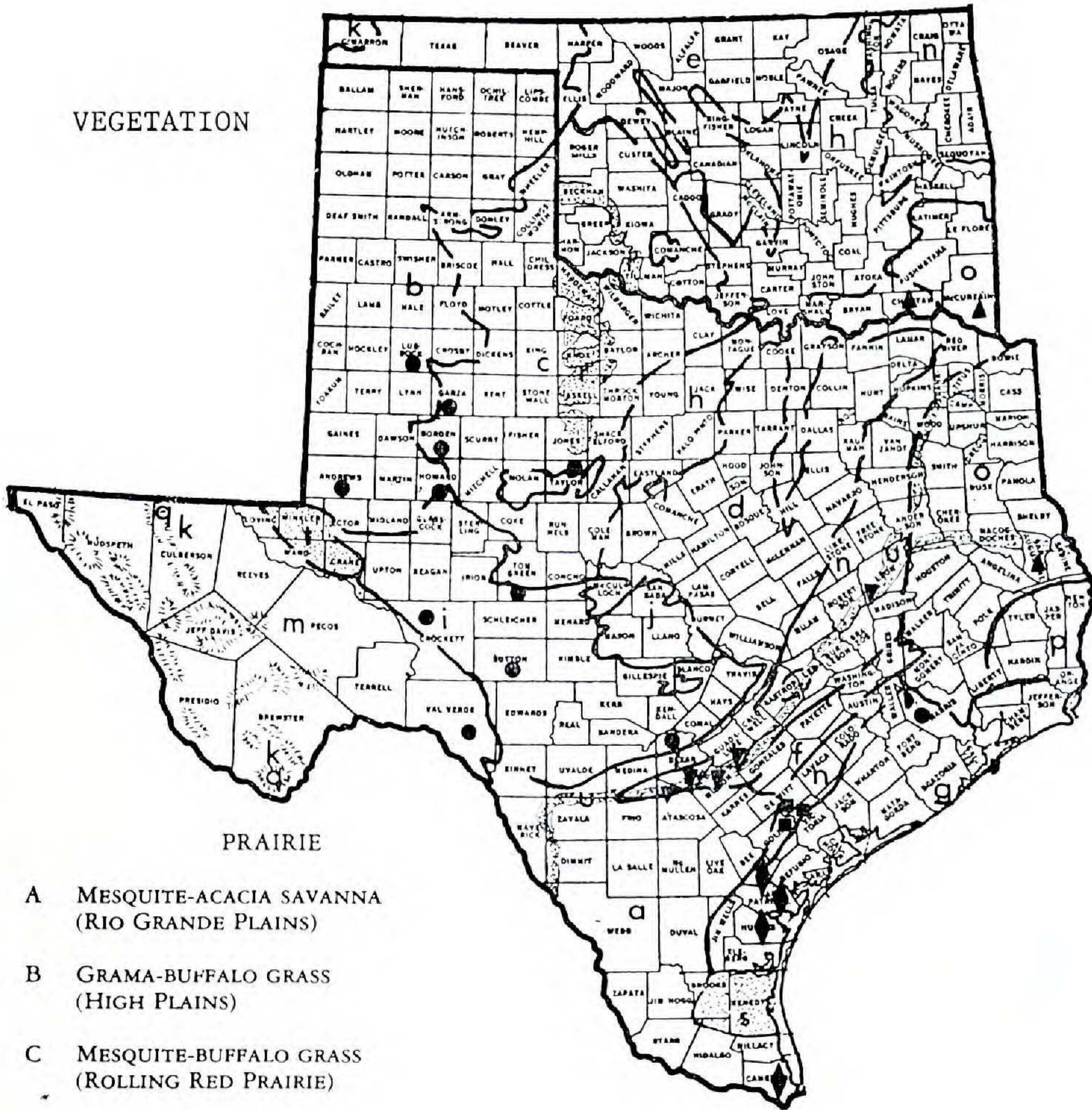
The importance of field studies has been acknowledged throughout the years. The recognition of the species habitat and ecological niche is especially important for rare endemics. To protect these species, the usual approach is to avoid all disturbances especially those of man. This attitude is common when one discusses protection from extinction. However, this approach may be the factor that exterminates those rare endemics that are pioneer species. With what is considered good range and roadside management programs, these species will automatically decrease in number of individuals because of the lack of disturbance. For pioneer species, an active management program should include plowing or blading of the habitat periodically to provide for ecesis. The time intervals for disturbance should be studied for each individual taxon.

As a result of field studies on the distribution of taxa proposed as endangered species (Federal Register 41 (117). 1976), the following taxa have been determined to be more widespread or more abundant than previously thought and are neither threatened nor endangered (Fig. 1). The field research and illustrations were supported by the Office of Endangered Species, U.S. Fish and Wildlife Service, Albuquerque, NM. The vegetation map (Fig. 1) is a composite of past researchers as enumerated in "The Mosses of Texas" (1980, SMU Herbarium, Dallas, TX).

POLYGONELLA PARKSII Cory. Fig. 2. H. B. Parks collected the species in Wilson (1937) and Atascosa (1940) counties. D.S. and H.B. Correll were apparently the first to collect the species in Leon County in 1968. During the fall of 1979, I collected plants from Leon, Atascosa, Wilson, Bexar, and Guadalupe counties.

This pioneer or invader species is restricted to deep loose sand of oak woodland south and east of San Antonio with one disjunct population in Leon County. Abundant locally, this endemic is found along graded or bladed fireguards of ranches and other disturbed areas such as vacant lots between residences. Periodic blading or grading of the roadsides would

Fig. 1. Distribution of four Texas endemics (*Grindelia oolepis*—diamonds; *Machaeranthera aurea*—half circles; *Polygonella parksii*—triangles, points down; *Polygonum texense*—circles) and two rare species (*Calliandra biflora*—squares; *Leavenworthia aurea*—triangles, points up.)



VEGETATION

PRAIRIE

- A MESQUITE-ACACIA SAVANNA (RIO GRANDE PLAINS)
 - B GRAMA-BUFFALO GRASS (HIGH PLAINS)
 - C MESQUITE-BUFFALO GRASS (ROLLING RED PRAIRIE)
 - D BLUESTEM-NEEDLEGRASS (BLACKLAND PRAIRIE)
 - E BLUESTEM-GRAMA GRASS (NORTH CENTRAL OKLAHOMA)
 - F BLUESTEM-BUFFALO GRASS (FAYETTE PRAIRIE)
 - G BLUESTEM-SACAHUISTA (GULF COASTAL PRAIRIE)
- WOODLAND
- H OAK-BLUESTEM (E & W CROSS TIMBERS-TEXAS; CROSS TIMBERS-OKLAHOMA)
 - I JUNIPER-OAK SAVANNA (EDWARDS PLATEAU)
 - J MESQUITE-OAK SAVANNA (LLANO BASIN)
 - K PINYON-JUNIPER (BLACK MESA & TRANS-PECOS MTNS.)
 - M CREOSOTE BUSH-SHRUB (TRANS-PECOS BASINS)

FORESTS

- N OAK-HICKORY (E TEXAS & NE OKLAHOMA)
- O OAK-HICKORY-PINE (E TEXAS & SE OKLAHOMA)
- P BEECH-MAGNOLIA-PINE-OAK-SWEET GUM (BIG THICKET)
- Q PINE-DOUGLAS FIR (TRANS-PECOS MTNS.)

DEEP SAND

- R SHINNERY (N TEXAS & SW OKLAHOMA)
- S MESQUITE-LIVE OAK SAVANNA (RIO GRANDE PLAINS)
- T SAND DUNES (S HIGH PLAINS)
- U CARRIZO, SPARTA, & QUEEN CITY SANDS

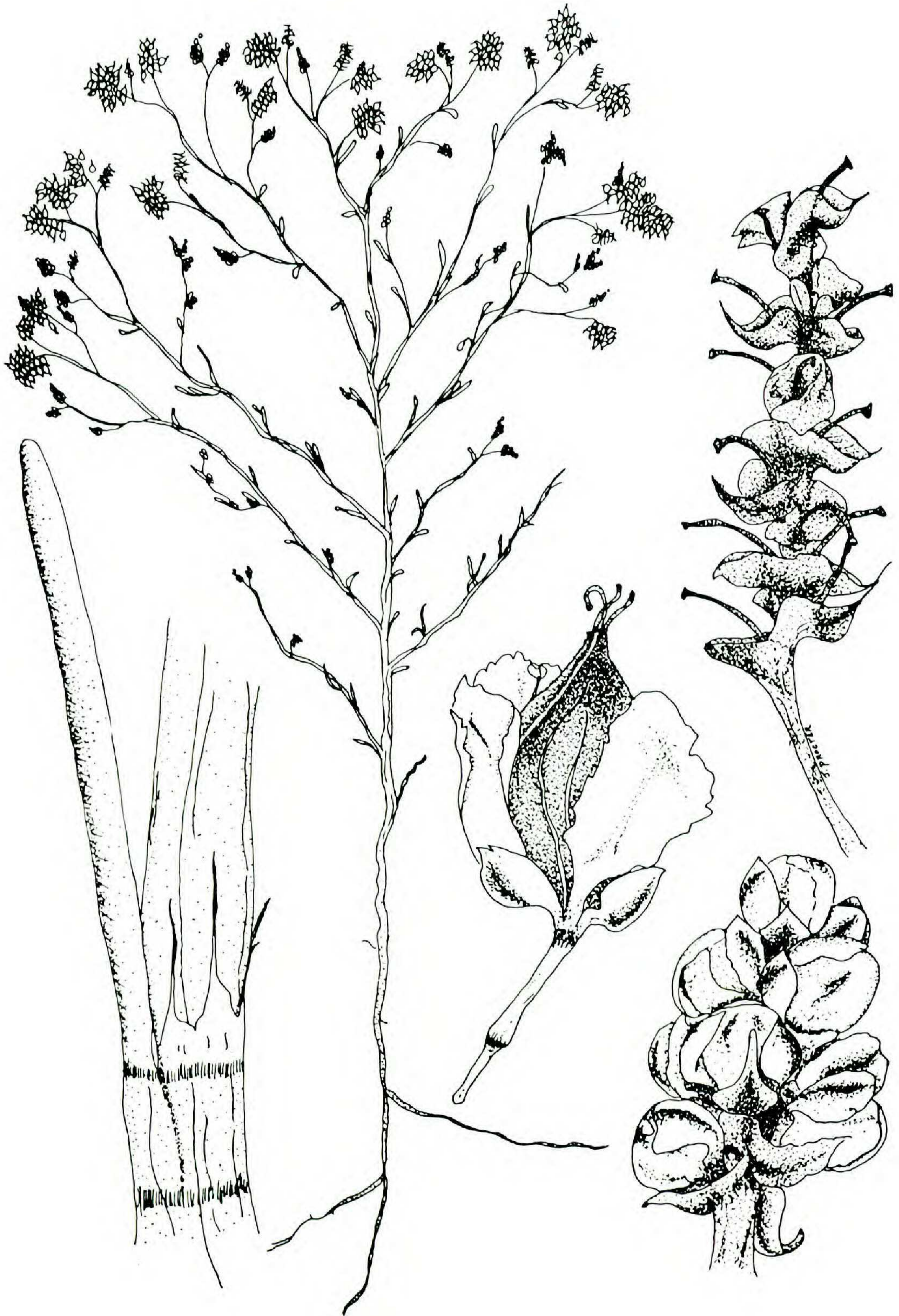


Fig. 2. *Polygonella parksii* Cory

increase the amount of habitat.

GRINDELIA OOLEPIS Blake. Fig. 3. R. Runyon and then J.N. Rose collected specimens from the Brownsville area (Cameron County) and sent them to S.F. Blake who described the species in 1928. Collections were made at various intervals from Cameron, Nueces, Bee, and San Patricio counties until 1964. Apparently uncollected from 1964 until 1979, I relocated 5 populations in three counties and added one new population. Field work failed to relocate the other populations. All the observed populations were growing in disturbed habitats between the highway and railroad tracks or in towns along streets.

This endemic is restricted to the black clay soils of the Gulf Coastal Bend (Corpus Christi area) and the Rio Grande Valley (Brownsville area). In October 1980, numerous plants were observed growing in the towns of Agua Dulce and Robstown along the streets, waste areas, and in an old cemetery. The blading of one population of this rhizomatous perennial along the roadsides in October 1979 was observed in October 1980 to be more densely populated than before. Evidently, moderate periodic disturbance is required to maintain the lower seral stages of succession to which it is adapted. Alfred Richardson also collected it near Brownsville, in September 1980 in a habitat where it was functioning as an invader species with little competition. This rare endemic is infrequent but locally abundant.

POLYGONUM TEXENSE M.C. Johnston. Fig. 4. The oldest collection was made by S.M. Tracy in 1902. However, recognition and publication as a distinct species did not occur until 1969. Johnston reported five counties, and with six additional counties from SMU collections, and one county and recent collections from the Angelo State University Herbarium, the total number of counties is now twelve. A specimen I collected in Taylor County in 1964 was identified during this study and the grazed mesquite pasture yielded numerous plants in a visit to the site in 1979. With the widespread occurrence of this taxon occupying the lower seral stages of succession, this endemic is more inconspicuous than actually rare.

CALLIANDRA BIFLORA Tharp. Fig. 5. The type specimen was collected in the southwestern part of DeWitt County in 1942. Two other specimens were cited in the original publication, one from western DeWitt County and one from northeastern Goliad County. M.C. Johnston collected the taxon in 1954 in Goliad County and also in 1960 from near Loreto in Tamaulipas, Mexico. Geyata Ajilvsgi studied and mapped populations in 1976, and extended the range into Victoria County. M.D. Conner also mapped populations in 1979.

This species is restricted geographically in Texas to northeastern Goliad County and adjacent DeWitt and Victoria counties. In Tamaulipas, Mexico, collections indicate a range of about 12 mi in distance. The current Texas populations mapped in 1976 and 1979, indicate the species is restricted to shallow sandy areas with a caliche substrate and apparently occurs in the

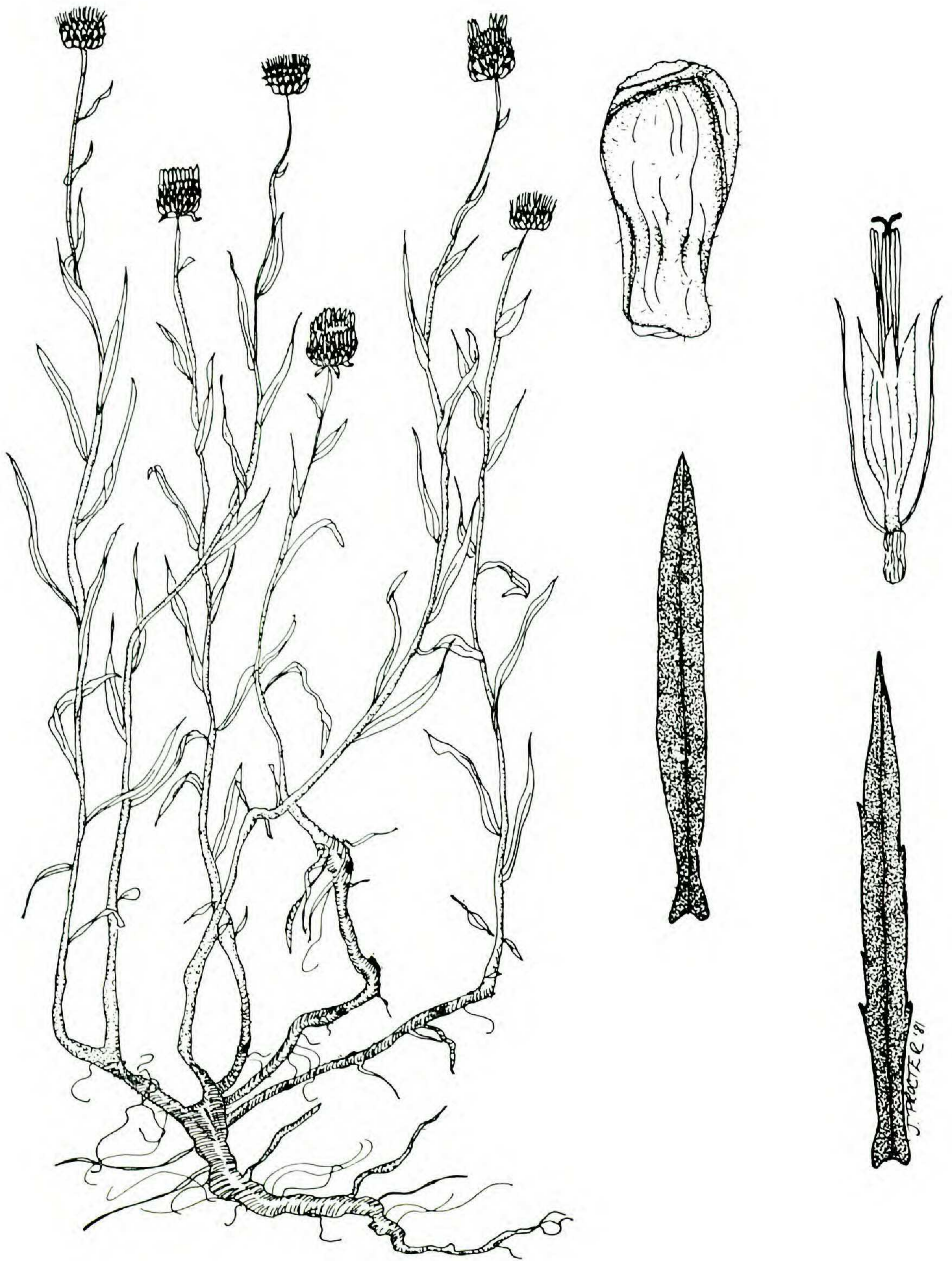


Fig. 3. *Grindelia oolepis* Blake

middle or upper seral stages of succession. With the number of individuals and number of populations, the species is neither threatened nor in danger of extinction in Texas.

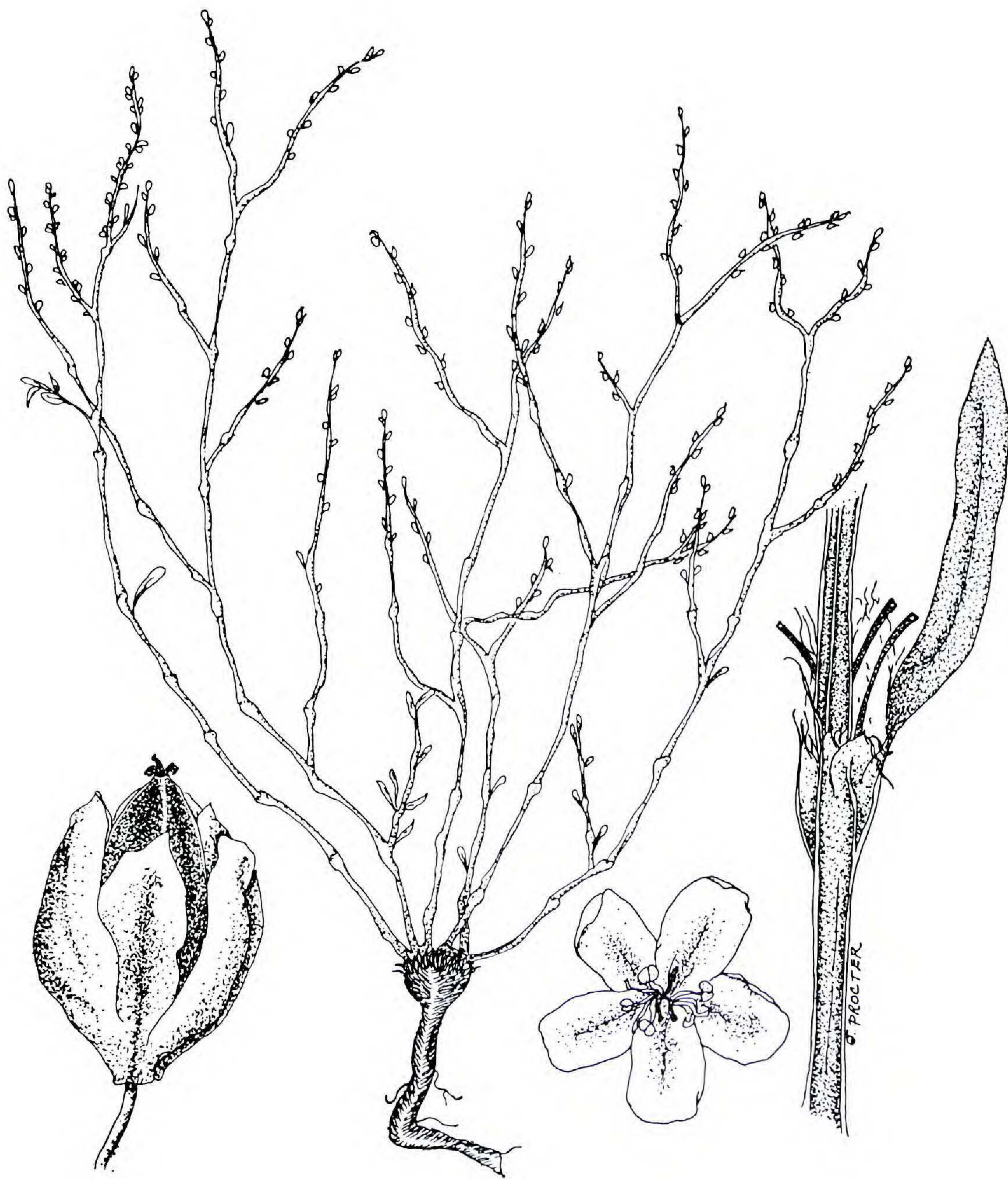


Fig. 4. *Polygonum texense* M. C. Johnston

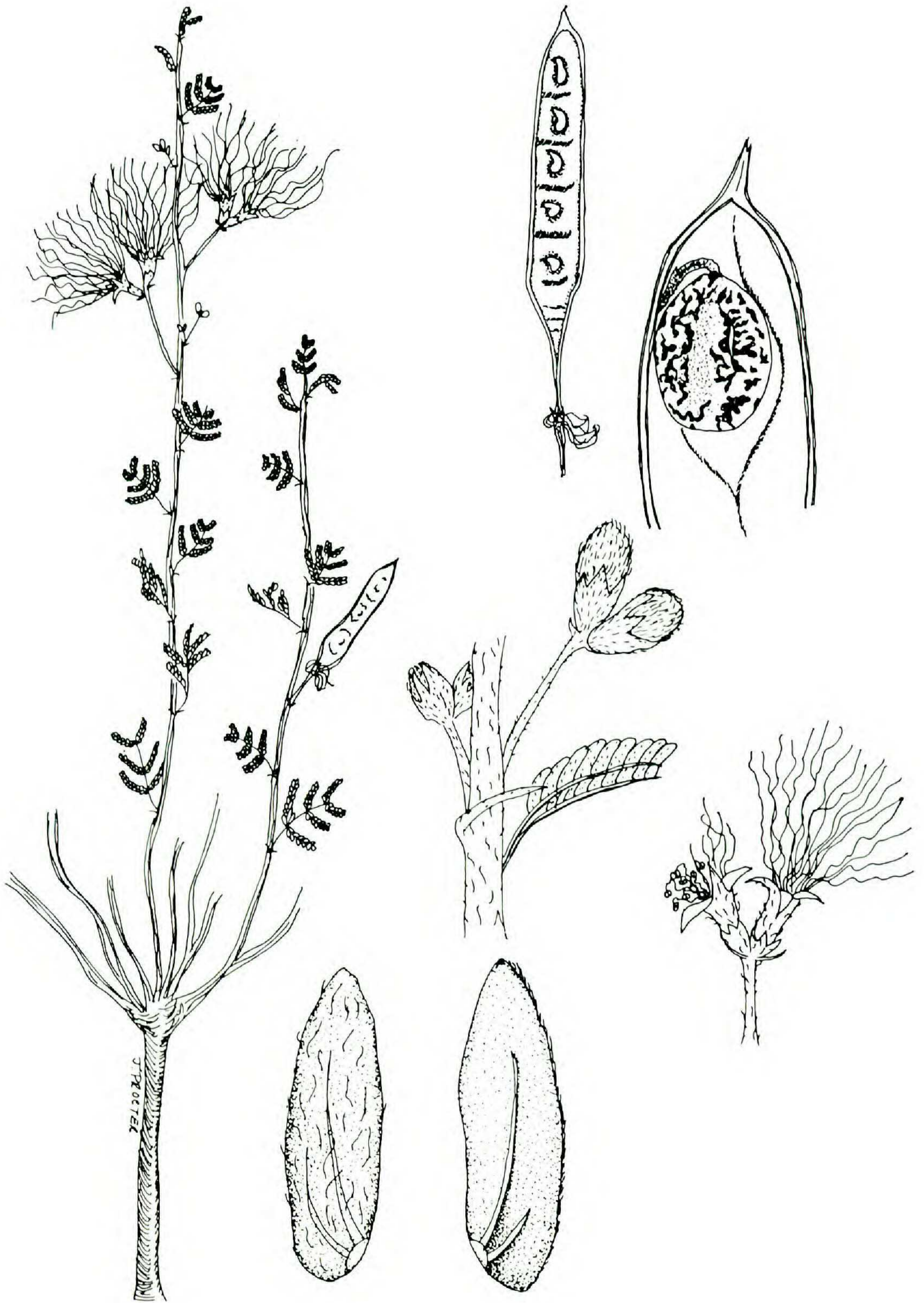


Fig. 5. *Calliandra biflora* Tharp

LEAVENWORTHIA AUREA Torrey. Fig. 6. Dr. M.C. Leavenworth, a medical officer in the U.S. Army, was stationed at Fort Towson (Choctaw County, Oklahoma) and at Camp Sabine (Louisiana) in the 1830's. In about 1835, Dr. Leavenworth collected the species at Fort Towson and shipped the specimens to Dr. Torrey who described the taxon. In 1836-37, Dr. Leavenworth apparently collected the taxon at San Augustine (San Augustine County, Texas) on a trip to Nacogdoches, Texas. These two localities are still the only known areas of occurrence for the species. The glade-like habitats may be interpreted as edaphic climaxes or as early seral stages of primary succession.

TEXAS. E.J. Palmer collected the species at San Augustine in 1915 and 1918. D.S. and H.B. Correll collected in that vicinity in 1961 and 1962. In the spring of 1979 and 1980, E.S. Nixon (Stephen F. Austin State University) studied and mapped the populations around San Augustine.

The habitat is a glade-type area on seepy, wet Weches outcrops overlying an ironstone rock substrate. This taxon is a pioneer species occupying the sandy gravel of the Weches that is made up of glauconite with megafossils producing the high calcium content. This habitat has been grazed over 150 years and the populations, while not extensive geographically (about 1.5 miles in diameter), are quite stable with apparently good reproductive potential.

OKLAHOMA. McVaugh specimens in 1947 began the activity again with numerous collections taken over the past 33 years. In 1955, R.C. Rollins studied the Oklahoma populations and monographed the genus. Since 1968, the Taylors have been studying the species and in the spring of 1980, mapped the current populations.

The species is restricted to the Washita group of moist shallow limestone soils—glade type. This taxon is a pioneer or invader species of disturbed, exposed limestone. It is the first species to occur on graded (bladed) sites. Current populations occur in the Washita group extending from 5 miles west of the Arkansas state line (McCurtain County) to near Hugo (Choctaw County), over a 60 mile distance where in some areas the populations appear to be continuous for several miles. Periodic grading or blading of the roadside would enhance the populations along roadsides. This is a rare species that is locally abundant.

MACHAERANTHERA AUREA (Gray) Shinnars. Fig. 7. Asa Gray described the taxon in 1849 based upon a Charles Wright collection from near Houston (Harris County), Texas. In 1897, F.W. Thurow collected the species four miles north of Cypress, northwest of Houston. Approximately 22 miles southeast of the Thurow collection site, R.C. Jackson and E.B. Smith collected the taxon (7 Oct and 16 Oct 1964, respectively) in Houston at the junction of Highway 290 and W 34th Street. I relocated populations in the vicinity of Thurow's original collection site during the latter part of October in 1980. J.W. Kessler mapped the current populations in late

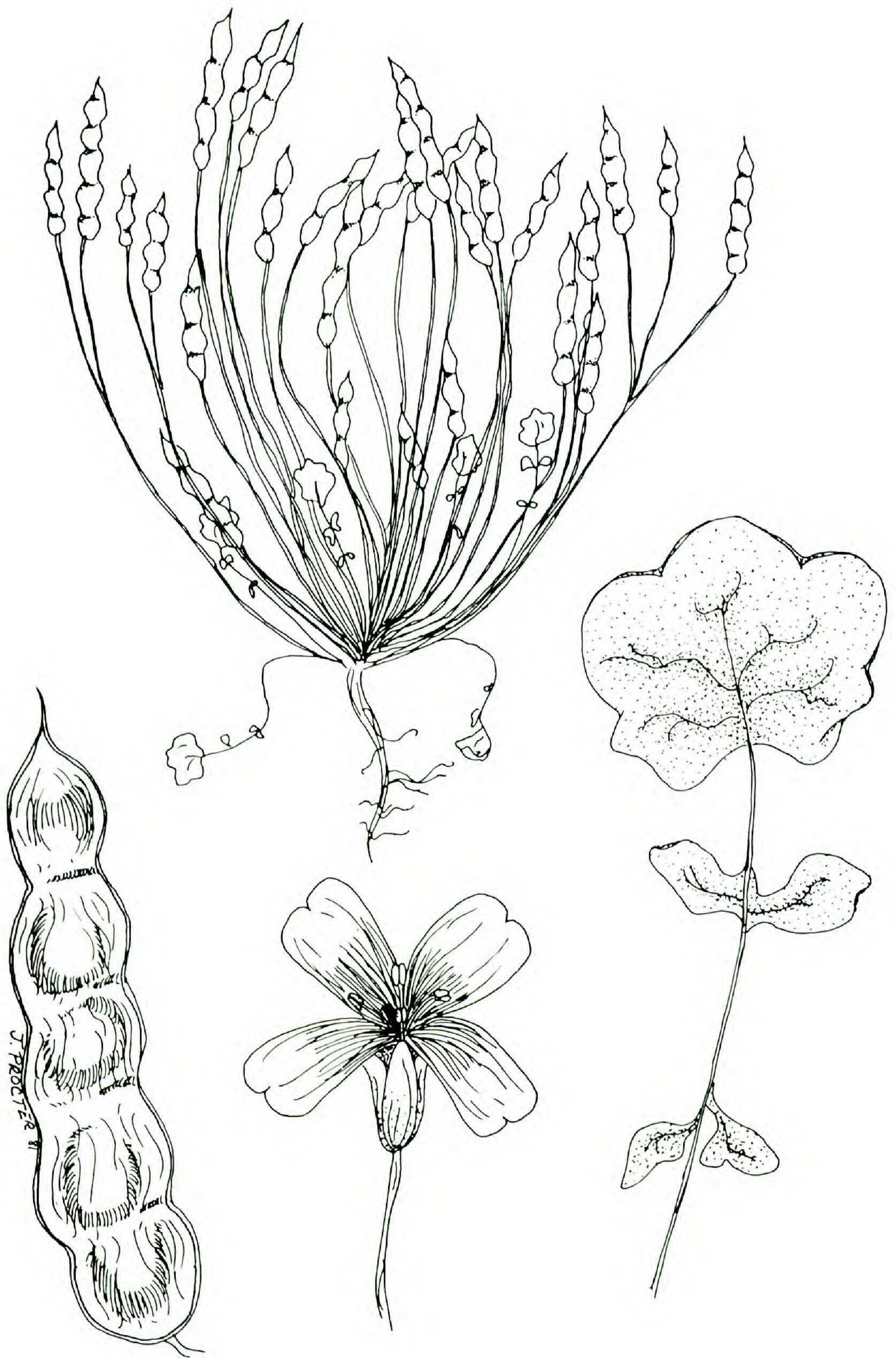


Fig. 6. *Lcavenworthia aurea* Torrey

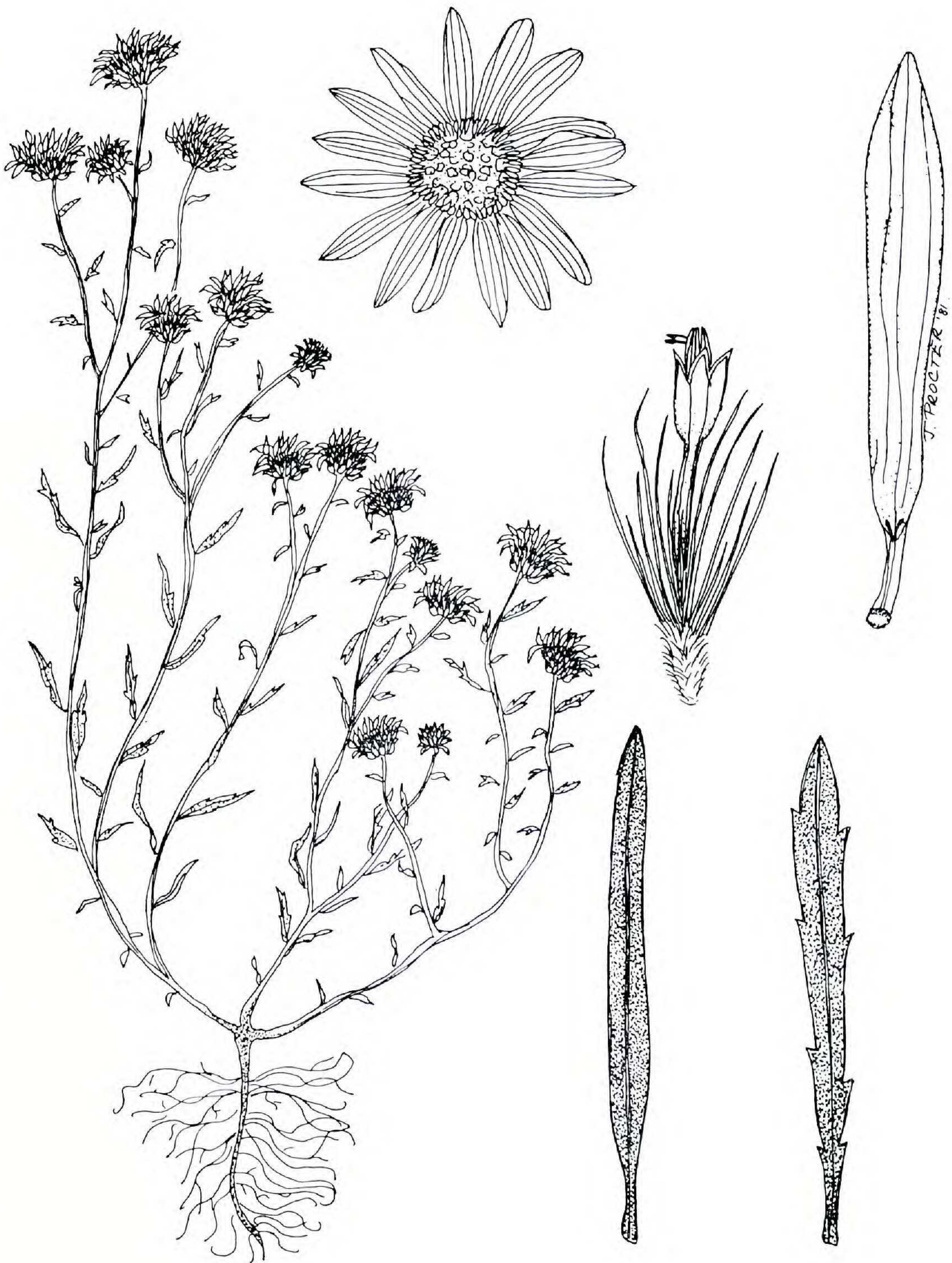


Fig. 7. *Machaeranthera aurea* (Gray) Shinnars

October and early November 1980, and examined a specimen from Galveston County (TAES). This rare endemic, locally common, occurs over an 8.5 mile area between Cypress and Tomball, Texas.

This pioneer species of the first stage of plant succession occurs primarily on Gessner loam with a few populations occurring on the Wockley fine sandy loam and Clodine loam. The habitat consists of barren areas along roadsides and prairie openings with little or no competition from other plants. In areas of appropriate soils, periodic blading of the roadsides would create additional habitat for this locally common endemic. In the vicinity of Highway 290 and W 34th Street, the vacant lots and roadsides have developed too much vegetation, thus, eliminating good potential habitat of barren, exposed soils.